GARDEN AND FOREST.

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The Sequoia Reservation.

LAST week we spoke of the efforts of a railway lobby to secure a right of way through Yellowstone Park. We might have added that every one of the forest-reservations which have been set apart for public use under the President's proclamation is threatened with invasion of one kind or another. When the Yosemite Valley was dedicated to public use there was a strong protest by men who hoped to use it for their personal profit. When it was found necessary to enlarge the reservation, so as to save the streams which flow into the valley by protecting the forests about their sources, the protest was still more energetic. Unless this area was included in the reservation, it was very plain that these highlands would soon be stripped of their timber, and this extension of Government control injured no one but unlawful trespassers. The land can never be subdued to agricultural use, and some of the mountains included in it rise above the timber-line. But the men who were selling timber which belonged to the Government, and the sheep-herders, who were setting forest-fires every year in the hope of benefiting the pasturage to which they had no right, were up in arms at once.

The big trees south of the famous Mariposa group have already been attacked, and one of the most important groves was taken possession of by a colony for the purpose of working them into timber. These wonders of the forest are a part of the nation's inheritance, and the trees are worth infinitely more as they stand than they would be when cut down and sawed up. If they are preserved they will draw visitors from all parts of the country and all parts of the world, and in a purely business point of view they would in the long run bring more money into the state as a natural attraction of unparalleled beauty and grandeur than they could in any other way. For the past year they have been protected by detachments of the army, which, under national authority, patrol the reservation. The lawless men who covet the timber of these great trees have become enraged because the Government is undertaking to preserve the people's property. The California papers contain accounts of active efforts now being made there and in Congress to reduce the area of the reservation, and the sheep-herders are complaining that they have been deprived of their rights. A convention of the sheep men of three counties has lately been held for the avowed purpose of procuring the repeal of the act establishing the Sequoia Reservation, and it is well for the people and for Congress to know that if they relax their vigilance fires will again be sweeping through these forests and saw-mills will soon begin their desolating work.

No wrong has ever been done to a lumberman or shepherd by establishing these reservations. No man has a claim to pasturage on Government lands, still less right has any one to cut down the trees which belong to the people, or to kindle fires which will destroy not only the forest as it now exists, but all hope of forests in the future. The agitators for unlimited sheep-ranging boldly denied in convention all the truths in regard to the beneficent influence of forests which have been established by centuries of human experience. They asserted that the streams would continue to flow as evenly without forests as with them. They denied that the trampling and browsing of animals injure the growth of the woods. They even denied that fires are ever kindled in the interests of these sheep-herders, although every one who has ever been in California knows better. What they really want is full opportunity to steal the timber from the Government forests and to get rich by pasturing their flocks on Government land, where they are sure to do incalculable damage.

It is not probable that the Government will think of abandoning these forests, or any part of them, in obedience to a preamble and resolutions passed by a convention of would-be trespassers. But it is important that the people of the country should realize the need of constant watchfulness if these reservations are to be saved. Attacks upon them, open or insidious, may be expected at any time. The men who organize these attacks know just what they want and the most promising schemes for obtaining their ends. The individuals who take active interest in them, on the other hand, are few and scattered, and the reservations will never be permanently safe until their value is generally recognized throughout the country. No one will dare to attack them when an affectionate regard for them has become a universal public sentiment.

The Love of Nature.—I.

ALL human beings draw pleasure from nature in the rudimentary sense of enjoying fresh air, sunshine and a free open outlook. Every one prefers a bright day to a gloomy one, and a balmy air to harsh tormenting winds; and almost every one will confess that a green landscape is pleasanter to look upon than grimy streets, even though he may have good reasons for preferring a town as a place of residence. Such likings as these, however, prove no real love of nature. They are almost purely physical; they betray no more sentiment than the animal which is pleased when basking in the sunshine.

But the great majority of people, even among those whose minds are uncultivated and who do not practice the common proprieties of life, have a deeper feeling for nature than this, and can appreciate something of its true beauty. Stupid and brutalized indeed is the man or woman who does not notice a brilliant flower, or who would not be impressed by the view of a mighty mountain chain. On Sundays our parks are crowded with laboring people, who spread through every quiet walk and shadowy glade, and like nothing so well as to saunter or lie upon the grass; and although part of their pleasure is simply physical, any one who has sympathetically mingled with them knows that a great deal of it is of finer quality. The beauty of the

surrounding scenes impresses even the dullest eye and appeals through it to the most sluggish imagination. Even the roughest dweller in the tenement-house district admires the shores of the Hudson River when he sees them on some summer excursion, and is impressed by the beauty of the sea when for the first time he stands on a beach where giant waves are breaking.

This instinctive admiration for the beauties of the natural world is what many persons understand by the love of nature. But it is not, in the truest sense, the love of nature. It is distinctively a love for natural things which are beautiful, of course, but which are also unfamiliar and therefore striking. Let the dweller in tenement-houses inhabit a lodge in the Central Park for a while, and he might seek his Sunday entertainment in a down-town street. Let him work on a North River schooner, and he would quickly forget to notice the beauty of the shores. The same attitude toward nature can be observed in the case of persons of wider cultivation. Familiar natural features soon grow uninteresting. The artisans who crowd the park on Sunday enjoy its unfamiliar beauty more truly than most of the wealthier folk who drive there almost daily. It is curious, indeed, to see how few of these turn from the fashionable East Drive into the much more beautiful West Drive. And it is still more curious to find that hundreds of New Yorkers, who have made pilgrimages in search of natural beauty from the Nile to the Sierras and from the St. Lawrence to Mexico, have never left their carriages to see what the pathways in their own park might reveal. The Ramble is as unknown to them as if it lay in China, and they exclaim with surprise when you tell them that they might travel a thousand miles and see nothing prettier.

What people of this kind usually care about is not nature itself, but those conspicuous natural effects which are called scenery. Scenery is not the whole of natural beauty; it is only one manifestation of it; and a person who delights in a magnificent view, but finds all flat regions hopelessly tiresome, or who feels the grandeur of a rocky coast, but not the loveliness of a green-fringed quiet shore, does not really love nature. His attitude is like that of one who should profess to love flowers, but, while admiring a Rose, should despise a Forget-me-not. The true test of a love of nature is that one who gives interested attention to all natural effects and forms, and finds beauty where the average eye sees none.

Of course, there are grades and degrees of natural beauty, and for each grade the true lover will have the corresponding amount of admiration. He will not call a Belgian plain as beautiful as the valley of the Rhone, or declare that a Nettle has the charm of a branch of Apple-blossoms. But there are few plants which have no beauty of any sort; and there are few spots on earth where man's hand has not obliterated Nature's intentions entirely, so wholly devoid of charm that the sensitive eye and mind cannot enjoy them keenly.

Admiration, says a French writer upon art, "is the active æsthetic form of curiosity." And this means that he who really admires the works of God will be lovingly curious about the Hyssop on the wall as well as about the Cedar of Lebanon; will see more to please him in a rough bit of pasture-land than the average person sees in a whole fertile valley. Who can love nature better than the landscape-painter who spends his whole life in transferring its beauty to canvas for the instruction and pleasure of his fellowmen? But no one is less in need than the landscape-painter of what is called scenery. It is not he who greatly prefers the cañon of the Yellowstone to the banks of the little river near his home. When he is brought to face magnificent scenery he experiences keen delight, but he gladly comes back to his quiet plains, his placid pools, his little forest-glades. Nor is it merely because these things are better fitted than grander things for transferring to his canvas. His own small corner of the world is enough for him, as a thing to enjoy no less than as a thing to paint. Delacroix was not a landscape-painter, and so cannot be suspected of looking at inanimate nature with an eye for good subjects; and there has never been a painter whom we could more easily credit with an inborn love for striking and even spectacular kinds of beauty. But fine scenery was not essential to his enjoyment of nature. "The poorest little alley," he wrote one day from a shabby suburb of Paris, "with its straight little leafless saplings, in a dull and flat horizon, can say as much to the imagination as the most bepraised of sites. This tiny cotyledon piercing the earth, this Violet shedding its first whiff of perfume, are enchanting. I love such things as much as the Pines of Italy."

This is the voice of the true lover of nature, and like it was Corot's voice, which constantly praised not the grandeurs which he had seen on his travels, but the tender, subtile beauties around his home at Ville d'Avray, and, more than anything else, the humblest of them all, "my leaves and my little birds." If one is born to love nature, or learns to love nature, as these great men did, and as all true artists do, the quietest scenes are impressive—the most familiar are ever new. A Blackberry-vine trailing over a gray rock gives one an emotion as delightful as the sight of a giant mountain; and custom cannot stale one's pleasure, for it is as infinitely varied, as perpetually renewed, as the leaves on the trees, the blades of grass in the field, the tints in the sunset sky.

Notes of a Summer Journey in Europe.—XIII.

THE Botanic Garden at Brussels is probably most famous and best known through the work and writings of its present Director, Professor F. Crépin, the distinguished rhodologist, who has made the species of Roses a special study for thirty years. It is very nearly a hundred years since the first botanic garden was established in this city, and it was for a time an adjunct to the School of Medicine. The site of the garden of to-day was acquired in 1826 by a private association having the name of the "Royal Society of Horticulture of the Low Countries," which was changed eleven years later to its present title of the Royal Society of Horticulture of Belgium.

The garden passed through several periods of success, misfortune and embarrassment until 1870, when it became the property of the Government, and it is from this time that it has taken high rank as a scientific institution. Previously, being private property, it was of comparatively little use to the public, and the work carried on was chiefly horticulture pure and simple. The total area of the garden is only about sixteen acres, but, although it is not so large as some others, it takes rank among the best-kept and best-equipped public gardens in Europe. But it is not given so much to the formation of a collection of rarities or novelties as it is to furnishing a fair representative and instructive botanical collection within its small area. The aim has been to get typical examples of the different genera and to introduce the most remarkable species, preference being given to those which are native.

In addition to the open-air collections, those of the greenhouses contain a larger and more varied assortment than might be expected, and in very good order. These, added to the botanical museum and valuable herbarium, afford excellent opportunities for study by students of the university and others. The Victoria regia house contains some very fine specimens of the great Amazon Lily and also a good representation of other aquatic plants.

The larger portion of this botanic garden is as freely open to the public as is compatible with good order, and it is as freely used as a park by the populace. A small portion is given up to the "School of Botany," or a collection of plants, arranged according to the classification of Dumortier, which is available to all regular students and those really interested in the study of plants from the botanical standpoint. Plants of a tender or alpine nature are often protected from the hot rays of the sun by small wicker hood-like screens about two feet in height.

A portion set apart as a "School of Floriculture" is designed to furnish practical information about live plants to gardeners, florists or any who may be at all interested in a garden, and it is freely open to the public. Into this collection the most notable of the new introductions are annually introduced, so that the amateur may see and appreciate the merits or demerits of a novelty before purchasing it for himself. Some of the beds make a handsome show, and the condition of the plants goes

far to prove that botanical science and instruction and good cultivation may all be accomplished together. Too often botanical collections are mere aggregations of species and give little idea of the capabilities of the individuals under favorable conditions or good cultivation. There are enclosures devoted to collections of officinal and poisonous plants and to those of economic value as food or in manufactures, all such being grouped together which have the same peculiar value.

The small area of the garden precludes the possibility of establishing an arboretum or systematic collection of trees and shrubs, but a considerable number of species have been massed together on the western side. Conifers, apparently, do not thrive. A system of instructive labeling has been introduced here, which has been copied at Copenhagen and perhaps other places. The labels are made of heavy sheet iron, those of an average size being cut a little over six inches wide and nearly nine inches long. They are painted, and the family, botanical name (and chief synonym, if any), common name and habitat are given; and on the same label, immediately underneath the foregoing information, a map of the world is neatly painted, which shows the geographical distribution of the species. These labels are very neat, and are said to endure exposure for many years without material injury or effacement. They cost from about thirty to sixty-five cents each, according to the size and amount of work required, and they may be procured by application to officers of the garden. This form of label would be rather too costly for most botanical establishments, and for all practical purposes the name of the native country of the plant should be sufficient.

The species of Roses in the garden have a particular interest because they are the special study of the distinguished Director. I noticed among them the true Rosa foliolosa of the south-western states, although here growing less vigorously than at the Arnold Arboretum. This little Rose is extremely rare in cultivation, and the plants under this name sometimes belong to some other common species. The occasional flowering throughout the summer of Rosa rugosa is here considered as simply an accidental, and not a reliable, character. But R. Indica is a true remontant, and a hybrid of this and of R. rugosa is found to be quite hardy here. The flowers are white, fairly double, fragrant like R. rugosa, and the blossoms are produced continuously. The foliage and habit are somewhat like those of R. rugosa.

The principal large park in the city is mainly shaded by fine Beeches and English Elms, but Horse-chestnuts, Maples and Lindens also enter into the composition. It is surrounded by a double row of the broad-leaved Linden (Tilia platyphyllos), planted uniformly apart, with their trunks free from branches for twelve feet, and with the tops squarely clipped off at eighteen feet from the ground. The branches of the trees in the rows are interlaced, while the sides are cut hedge-fashion. In short, the whole thing might be called a hedge raised twelve feet in the air, and it is an example of a once popular kind of tree-pruning still often met with in many French towns.

In the Place du Petit Sablon I noticed another relic of a fashion which years ago came into vogue in some parts of Europe, and a hint of which is shown when flower-beds are ornamented with shells, light-colored stones, and the like. A number of small formal beds are arranged with lines of dwarf Box, Sempervivums or Feverfew, the intervening masses being filled with evenly broken small sandstone of two kinds, one being of a grayish color, and the other reddish. These are thickly put on the ground alternately with each other, or with the plants. At a little distance the result is quite deceptive, and equally effective as would be the use of the more expensive Sempervivums. The broken sandstone is also used as borders to formal beds. The practice will commend itself to those managers of public gardens, squares and cemeteries who are economically minded, but have a mania for formal designs, such as geometrical figures, monograms or names.

Arnold Arboretum. *J. G. Jack.*

Flowers in Town.

IT is hardly possible now to draw that distinction between hot-house flowers and garden flowers which was formerly so clearly marked. Not many years ago few plants were grown under glass in winter which could be grown outdoors in spring, summer or autumn. Greenhouses were kept chiefly for exotics, and women were content to adorn themselves, while snow lay upon the ground, with such flowers only as nature had originally given to their sisters of other lands. When Roses were out of season, they wore Camellias; and while waiting for the spring to make the bulbs blossom in their flower-beds, they filled their conservatories with importations from the Cape. Now, however, it would be impossible to feel sure, from the flowers in our drawing-rooms and our florists' windows, what the season of the year might be. While utilizing the resources of other climes more fully than ever before, we have also transplanted our own summer gardens indoors; and every year an interested observer may notice new favorites from the border, and even from the roadside or the woodland glade, contentedly blooming in the florist's shop in winter and in especial variety as Easter approaches.

Persons who are not yet middle-aged can remember their surprise at seeing for the first time Lilacs and Lilies-of-the-valley before the snow was off the ground; yet now even the street-venders offer them to us. Until I was grown up, I never knew what a Daffodil was, because I always lived in New York in the winter and spring, seeing the country only when Daffodil-days were well over. "Early spring flowers" meant to me, in my childhood, nothing earlier than buttercups and daisies. But the city child is more familiar with the sight of Daffodils than most of her country cousins. Violets are easier to get in midwinter than in spring, and Roses are common all the year round.

This year, long before Easter-day, our streets were gay and redolent with spring and summer flowers, some of which it was very hard to believe had been raised in greenhouses with a definite idea of pecuniary gain. We have got accustomed to associating the traditionally modest Violet, beloved of the spring poet, with winter festivities, and it now seems as much a flower of the ball-room as of the woodland. But the still more modest Forget-me-not is yet instinct with sentiment, connecting it with brooks that wander through open fields and nestle into pools beneath the shadow of young-leaved Willows. Were these Forget-me-nots, which lay on the street-vender's bench while winter lingered in the air, really grown near at hand in artificial warmth, or had they been brought on the wings of a gracious wind from some softer southern clime? And the Lilacs themselves, were they really not yet in bloom on Long Island? Were not these outdoor-looking sprays of white and purple broken off recklessly by bare-foot boys standing on the fence, but carefully cut by a gardener's shears in a carefully heated house?

Still more surprising was it to see true denizens of the wild-wood blooming in pots as placidly as though they were Camellias. It was, indeed, a proof that our own country had come to town as well as that eastern lands had come west and tropic lands had come north, to be able to choose, for an Easter gift, between gorgeous Orchids, Bermuda Lilies, veritable Azalea-trees and blossoming shrubs of Mountain Laurel.

I have heard people say that it is a pity things have changed in this fashion. They feel that it is best, for the sake of securing that variety in our pleasures which means a perpetual freshness of interest, to limit ourselves in winter to the thousand exotics which we can get by artificial cultivation only, and to leave our own spring to bring us its own treasures in their turn. And they feel that this is best, also, for the sake of preserving that sentiment with regard to flowers which plays so great a part in the delight they give. They would have us render unto spring the gratitude that is spring's, and not forestall and cheapen it by thanks bestowed upon the clever gardener. They would have us recognize the procession of the seasons by not disturbing the natural procession of the flowers, and mark our months, as the Japanese do, by the special enjoyment of the special offerings of each.

But people who feel thus, I think, are usually those who live all the year round in the country, and when they come to town to see what we are about can afford to pity our confused, unsentimental way of mixing up Nature's bounties, sure themselves of receiving these bounties, gradually but continuously, in their true and most beautiful sequence. Or else they are persons who at least can leave town when they choose and watch not merely the Daffodils unfolding but the fuzzy gray buds swelling on the Willow-bushes.

To others who, like myself when I never saw Daffodils, spend only two or three summer months out of town, a confusing of Nature's sequence of gifts cannot matter so much. To them who never see the grass growing green except in a park, and who in a park cannot tell which early flowers have been transplanted from the hills just across the river, and which have been brought from across the sea, such flowers do not wear the associations that they wear for country-bred eyes. It matters not to them whether they first see Lilacs or Hyacinths, for they do not know which would bloom first out-of-doors. What they are chiefly concerned with is to see them both as soon as possible, and as many of them both as they can. It may be shocking, from the rural point of view, to as-

sociate Daffodils rather with a dinner-table in February than with a garden-border in April, and Lilies-of-the-valley with winter weddings rather than with dewy mornings in early summer. But how can they help it? And, deprived as they are of the better part, why should not they fill their lives as full of beauty as they can, even though Nature's processes be artificially forced, and Nature's order of things almost reversed? They cannot grow their flowers, or even watch nature grow them; and if they must buy them, ignoring whence they come, it cannot matter much whether they come from under glass or from under the greenwood-tree.

However, whether it is "right" or "wrong" to anticipate the seasons as we city folk now do with the help of the florist and his greenhouse, no one will question that it is right to bring the country to town in another fashion which has likewise developed vastly in very recent years. Surely it is an unmixed pleasure to think that no city child need now ignore the fact when the first spring wild flowers really begin to blossom a little way out of town, or when New Jersey gardens are at their best. Scarcely any wild flowers or common garden flowers came to us, even in their proper season, a few years ago. Now all the familiar kinds come, and not flowers alone, but the first hints and promises of flowers, and autumn witnesses that flowers have been. Pussy Willows come first, and budding sprays of shrubs that will bloom out in water, and then Marsh Marigolds and Trailing Arbutus and Jack-in-the-pulpits and Apple-blossoms, and so on to the outdoor Lilacs and Daffodils, cheapened now within reach of the slimmest purse, and the Mountain Laurel, not now in little pot-grown shrubs, but in big and splendid branches, and Swamp Honeysuckles and Daisies and Buttercups and bunches of Clover; and so on and on until summer is over and the wild flowers and common garden flowers are gone, and the bunches of Black Alder-berries come, and the streets are full of Chrysanthemums, and the reign of forced and coddled, coaxed and transposed greenhouse productions begins again. Truly, if our florists' windows now defy and contradict the calendar of the seasons, there are many months when our streets illustrate this calendar faithfully for any eye that knows how to interpret the pictures which Flora draws.

New York. *M. G. Van Rensselaer.*

Foreign Correspondence.

London Letter.

Uva Grass.—The following inquiry comes from a Californian correspondent: "Will you kindly inform me of the name and habitat of a gigantic grass of which I forward a few sprays? It is not grown here, but is imported and sold in a dry state under the name of Uva plumes. The plume itself is monstrous, being four or five feet long. The sprays droop entirely on one side, reminding one of the fleece of a Cashmere or Angora goat. The people who furnish the plumes in Europe will not give the name of the grass." I received a similar inquiry from an English correspondent nearly four years ago, and found that the plumes were then offered for sale by London florists under the name of Uva Grass. How they were obtained is not quite clear, some stating that they came from the Congo, others from India. On comparing the plume at the Kew herbarium it was found to be the male inflorescence of Gynerium saccharoides, a gigantic reed which grows on the river-banks of Cumana in Venezuela, and in Brazil. It is one of the most beautiful of all tropical grasses, the stems being twelve feet long, an inch in diameter, with leaves five feet long and one inch in width, the edges serrate and channeled along the midrib. In habit the plant is not unlike Arundo Donax. The panicle is terminal, at least four feet long, copiously branched and plume-like, the branches a foot and a half long and clothed with small flowers, which, when dried, are gray-brown in color. The plumes sold in the English shops are six feet long, including the stalk; they are extremely elegant and feathery, but are sometimes disfigured by dyes of various colors. There is a large plant of this grass in cultivation at Kew. It is grown in the tank which in summer contains the Victoria regia, and is as striking in appearance as some of the Bamboos. No flowers have as yet been produced by this plant. It is probable that the plumes sold in London, and also, apparently, those now sold in America, are imported from Brazil. Some of the plumes were among the exhibits from the island of Dominica at the Colonial and Indian Exhibition held in London in 1885. It is by no means unlikely that this Gynerium could be grown in the southern states, particularly Florida. I have never seen or heard of any other plant in cultivation in Europe except that at Kew, which was imported direct from Venezuela about fifteen years ago.

Sarracenias as Flowering Plants.—It is probable that you know a great deal more of the decorative value of Sarracenias than we do here. They are not by any means popular with us, being generally classed among botanical curiosities. But a well-grown and properly colored specimen of S. Drummondii or S. flava, or even of S. purpurea, is, in my opinion, an object of very considerable beauty apart altogether from its peculiarities of structure. We have numerous hybrids and seedlings of Sarracenias now, and at Kew there is a good representative collection of both species and varieties. They are grown in pans in a well-aired sunny greenhouse, except for about a month in early spring, when, after repotting, they are placed in a stove temperature and exposed to all the sunlight possible. Of course, they are kept very moist always. Under this warm treatment the new leaves, which are developed in March and April, grow rapidly, and lay the foundation for brilliancy of color in autumn. With the new leaves the flowers are pushed up. Hitherto we have removed most of the flower-buds to further the growth of the pitchers, but this year we left them to expand. They have been quite sensational, many of the flowers being five inches across. In form they vary somewhat, and in color they range from cream-white to bright yellow and rich crimson. These flowers are as pleasing as the most elegant Daffodils; they are fragrant, and last a week, at least, in water, and their colors are good. Sarracenias certainly deserve to take rank among first-rate flowering-plants for the greenhouse. I have never seen a Sarracenia grown out-of-doors in England that was satisfactory, nor have I seen imported wild plants with pitchers as fine as they produce under cultivation.

The weather here for the last week or so has been as exceptionally warm and sunny for April as it was previously cold and dull. The consequence of the change is apparent among the early-flowering trees and shrubs in the open air. Almonds, the most beautiful of all spring-flowering trees, and a common street-tree in the London suburbs, besides early Cherries and Plums, are already laden with flowers. Forsythia suspensa is a cloud of lovely yellow bloom, beautiful almost beyond comparison as a bush, and even more attractive when trained against a sunny wall; Acer rubrum, with its clusters of bright crimson flowers, A. hybridum, with its yellow clusters, and several others are now attractive. Parrotia Persica is even better than the Red Maple, several plants of it at Kew being now thickly laden with clusters of rich red flowers. It is a beautiful tree in leaf, and in autumn it assumes the richest colors before the leaves finally fall. The early Rhododendrons, such as R. Dahuricum and R. Nobleanum, are bright with flowers in the open borders. The rich mauve-purple of Daphne Mezereum is seen to advantage when the plants are grown in large groups, two round beds of it twelve feet across, and each containing about twenty-five plants two feet high, and nearly as much through, being especially effective. The small alpine D. Blagayana is also in flower on the rockery. Pyrus Japonica, in its several varieties, is in full bloom, the most attractive, on account of its rich blood-crimson color, being that called Mœrleesii. The Daffodils on the lawn are again a "waving sea" of yellow. The Crocuses, now over, have been equally showy. They are from the bulbs which had been used for forcing, and instead of being thrown away they were planted in grassy slopes on the lawns.

Flowers in April.—The supply of these for the English, and especially the London, market comes from Italy, France, Belgium, and our own small islands in the south,

as well as from the English gardens proper. It is interesting to find quantities of the feathery Mimosa (Acacia dealbata), Richardias, Anemones, Lilac and Wallflowers, all, or nearly all, from foreign sources. Orchids are gaining ground yearly as market flowers, considerable variety being now obtainable at the stalls. Good Cattleya-blooms can be purchased for sixpence, and Odontoglossum crispum for threepence each. Dendrobiums of several kinds are generally abundant, D. nobile, perhaps the best of all species, being very largely grown for the English flower-market. Liliums, Daffodils, Tuberoses, Eucharis, Freesias and Gardenias are generally abundant, and consequently cheap. Of course, Azaleas, Camellias, Roses, Carnations, Hyacinths and Tulips are sent in enormous quantities almost every day.

International Exhibition of Fruit.—This exhibition will be held on a piece of ground adjoining the Thames Embankment, and will be opened on September 28th next. Valuable prizes will be offered, and efforts are being made to obtain special features among the exhibits, such as collections of fruit-trees, showing the different methods of training, pruning, etc., also collections of fruiting trees grown in pots. It is probable also that lectures and demonstrations will be given, with the view of teaching the uninitiated something of the art of producing high-class fruit in England. London will be exceptionally rich in great horticultural exhibitions this year. Besides the usual important displays at Regent's Park, the Crystal Palace, the Temple and Chiswick, we shall have the above great collection of fruit and the International Horticultural Exhibition, which will open at Earl's Court on May 7th, and will continue throughout the summer. I have already informed you of the general plan of this exhibition, which promises to be a success, the greater portion of the vast space available for horticultural exhibits being already taken. Most of the principal London nurserymen have promised their support. Grottoes with banks of Palms and Ferns, Egyptian, Greek, Italian and other gardens, fountains, variously colored electric lights, high-class music, beside many other attractions, are being rapidly prepared. Altogether the exhibition promises to be both novel and interesting to the professional man as well as to the ordinary visitor. The *Gardeners' Chronicle* states that "the exhibition must be looked upon solely as a commercial venture, in which the District Railway and other parties are specially interested." Most exhibitions nowadays are commercial ventures, more or less. The play's the thing, after all.

London. *W. Watson.*

Plant Notes.

Some Recent Portraits.

THE colored plate published in *The Garden* on the 5th of March is devoted to a portrait of Cerinthe retorta, a member of a genus pretty generally distributed over Europe, northern Africa and Asia, and containing some showy and useful border plants. Cerinthe retorta is probably the most beautiful member of the genus, and is a native of the Peloponnesus and of Dalmatia. It is a hardy annual, growing from one to two feet high, with much-branched stems. The lower leaves are obovate and stalked, while the upper leaves clasp the stem by two rounded auricles. The flowers, which protrude above the showy purple floral bracts, are yellow, tipped with purple. This is a plant which might be expected to flourish in the United States, where the hot dry summers should help its development.

In the issue of the same journal for March 19th there is a colored plate of Streptocarpus Galpini, a species recently discovered in the Transvaal, near Barberton, by Mr. E. E. Galpin, who sent seeds of it to Kew in 1890, where it flowered in October of last year. The discoverer describes it as growing in crevices in the cliffs and under rocks, and only on the tops of the mountains just below the highest summits. Streptocarpus Galpini is closely related to S. Dunni, and, like that species, has but one leaf and a many-flowered raceme, although it differs from all other species in the form of the corolla, with a short and broad tube and a spreading almost regular limb. The color is rich blue, tinged with purple, the throat being pure white. The flowers are produced in slow succession, and continue to expand in cultivation during about five weeks. Mr. Watson, who has been so successful in hybridizing plants of this genus, was naturally anxious to cross Streptocarpus Galpini with other species and varieties, but his first attempt failed to produce good seeds.

In the March 19th issue of the *Gardeners' Chronicle* Trichodesma physaloides, a handsome boraginaceous plant of southern Africa, is figured. It is a herbaceous perennial with a fleshy root-stalk, from which are produced annually many erect stems which form clumps two feet across. The leaves are glaucous green, and the corollas, which are an inch across, are pure white. Mr. Adlam, of Pretoria, in the Transvaal, who has secured a stock of this plant, contributes to the columns of our contemporary the information that "Trichodesma physaloides grows near Pretoria on dry bare hill-sides at an elevation from 5,000 to 5,500 feet, and that it is an herb one to one and a half feet high with tuberous roots, the leafy stems dying down in our dry winters, appearing again with the first summer rains." The flowers are produced through the early summer, and it is a profuse bloomer. The flower-stalks and sepals are dull purple and the corollas are white. "It is suggested that the treatment given to tuberous Begonias would suit the wants of Trichodesma."

New or Little-known Plants.

Miltonopsis Bleui splendens.

THIS new Orchid is a garden hybrid raised in France by Monsieur Bleu, and it is the most distinct and beautiful among many hybrids of great promise which he has produced. It has attracted great interest, apart from its beauty, from the fact that it is the first hybrid Miltonia ever produced. It is the result of crossing Miltonia vexillaria with M. Roezli, plants which a few years ago were found rather difficult to cultivate, and were generally known as Odontoglossums of the Miltonia-flowered type, in which class were included Odontoglossum Phalænopsis, O. Roezli, O. vexillarium and O. Warscewiczi, all of which are now recognized as Miltonias.

It was only in the spring of 1872, after failures by Hollis and Roezl, that Chesterton succeeded in delivering live plants of Miltonia vexillaria to Messrs. Veitch & Sons, one of which, and the first one to flower in cultivation, flowered in February, 1873, in Veitchs' establishment. Roezl succeeded in 1873 in delivering one solitary plant of Miltonia Roezli to Mr. Bull, of Chelsea, England, for a large price, and this flowered in December the same year, and created as much sensation as M. vexillaria had the previous spring. Thousands have, however, been imported since that time of both varieties, and have become so popular and well known that no description of them is necessary.

The plant of Miltonopsis raised by Monsieur Bleu was secured by Mr. Sander, of St. Albans, who called it "a marvel," and from him Mr. Ames acquired a part of the plant.

It is intermediate in character and habit between the parents, and I think will prove of good constitution. The plant now carries two flower-spikes of three flowers each well above the foliage. The flowers measure in length four and a quarter inches, and the lip three and a quarter inches across. The sepals and petals are full, as in M. vexillaria; the base of the petals is suffused with delicate rosy purple on white ground; the lip is large and flat, bilobed in front, and of a delicate white color, faintly veined with pink; the base of the lip light chocolate, with twelve to fifteen radiating lines about an inch in length, of a

deeper color, while the three lines on the crest are of a reddish brown. We have grown this plant at the warm end of our Odontoglossum-house, near the glass, and close to where we grow plants of Miltonia vexillaria, and it receives the same treatment as regards potting material, temperature, etc., which is given to Miltonia vexillaria. The plants should never be allowed to get dry, and yet care should be taken not to give them too much water while they are resting. The temperature should be kept at about sixty degrees night and day, or fifty-five degrees in extreme cold weather, with free ventilation. They should be moist continually, and the plants kept well up to the light, but not in direct sunshine.

North Easton, Mass. *W. Robinson.*

Fig. 30.—Miltonopsis Bleui splendens, in the collection of Mr. F. L. Ames. The plant reduced.—See page 197.

Cultural Department.

An English Daffodil Farm.

THE Daffodil is to England what the Hyacinth is to Holland, and during recent years the golden chaliced flowers have become more in request for all forms of floral decoration. We hear much of the great bulb-farms of the Low Countries, but quite as instructive and more pleasing as a picture is a Daffodil farm, where upon true market scale the principal flower of an English spring is grown as it is by Mr. Walker, whose broad acres adjoin the picturesque common of Ham, almost under Richmond Hill, in Surrey, about ten miles from London. The flowers that surprise and delight the visitor to the Covent Garden Market in the months of April and May are for the most part produced at Ham, where only the finest types are planted. Under the special methods of cultivation adopted these flowers attain a much greater size and finish than in ordinary gardens. Of course, there are numbers of enthusiastic private growers. Mr. Peter Barr is now searching the Pyrenees for new types, and such amateurs as the Rev. G. H. Engleheart are making interesting experiments in hybridizing. But at Ham, on the rich level ground of Mr. Walker, the Daffodil is grown purely for the market, and therefore perfection in the individual flowers is aimed at rather than the acquirement of a varied collection. Here the bulbs are now approaching full bloom. The spring is late this year in England, and thousands of flowers, representing all the leading sections, but a few varieties only in each section, are dancing in the wind.

In 1884 the great Daffodil Conference gave an impetus to the cultivation of this flower, which amounted to a fashionable craze, but the effect of competition was to reduce the price fifty per cent., and while in 1884 it was computed that ten million bulbs were grown in England, the number is now over two hundred millions. In 1890 the flowers were sold at the rate of twelve bunches for ninepence, this reduction being due to the large and early consignments of good flowers from the Scilly Islands, Channel Islands and the south of France.

It is only when the produce is inferior that Daffodil-growing ceases to pay. Mr. Walker believes in the best cultivation, and therefore he always secures good prices. The soil is deeply dug, and before planting it is plowed, harrowed and rolled, to afford every encouragement to a vigorous healthy growth.

Naturally, the same conditions will not suit every variety alike. Some, as the so-called Whites—that is, the light-colored forms, as Cernuus—requiring a warmer position than those of more robust constitution, as the bicolor Empress. It is very interesting to note how differently Daffodils behave under the same conditions, and in 1881 Mr. Walker planted a trial bed of the various forms to test their behavior, the soil being strong loam of good depth. The result was that such varieties as Capax and Cernuus soon disappeared, but the more robust forms, like Horsfield's and Empress, thrived with surprising vigor. Manure is used only for the Trumpet and other robust Daffodils.

As far as possible the bulbs are lifted annually, although it seems a formidable task to go over beds two hundred to three hundred yards long. Mr. Walker places great faith in this annual lifting, and would serve all alike if it were possible, but a compromise is made by lifting the common kinds every two years and the best varieties each year. To this treatment is due the superb vigor of leaf and flower noticeable in all his plants. The bulbs are lifted when the leaves have died down, and they are dried, cleaned and replanted in the following August or September, the first variety to be planted being Ornatus, one of the Poet's Narcissi. They are planted in long beds, about five rows in a bed, and the soil is raised a few inches above the bed to keep the bulbs from stagnant water, as the growth suffers in places where the beds slope down to the ordinary level.

Although a thoroughly representative collection of Daffodils is grown, those kinds cultivated largely are few in number, and it will be useful to indicate them as they are possessed of strong constitution and bear the finest flowers. It is necessary to weed out well for such a purpose, where the list of Daffodils includes some eight hundred forms, many of them, however, differing in a slight degree, and chiefly in color, ranging through all shades of yellow, from a pure lemon tint to almost clear white, and pure white in those Narcissi of which the Pheasant's-eye is the leading type. Among the Trumpet varieties the greatest faith is placed in Empress, although popular opinion seems to incline more toward the noble bicolor raised by John Horsfield, the Lancashire weaver. To an uneducated eye little difference can be seen between them, but the Empress increases more freely, blooms more profusely, and the flowers are of better substance than those of Horsfield, which by reason of their softness do not last so long in full beauty. But both are splendid varieties, the trumpet beautifully shaped, bold, rich yellow, and in striking contrast to the creamy white and robust perianth. The flowers of both attain surprising dimensions and show remarkable clearness of color, and it is not unusual to find here six and seven flowers proceeding from one bulb. When visiting Ham last year I found in a row of Empress one bulb carrying no fewer than eleven blooms, each of fair proportions. When we come to the true yellows a post of honor is given to Emperor, a superb Daffodil, splendid in form, color and size, a rich mass of yellow, and used much in the English parks, where it is planted in distinct beds to give the full richness of the handsome flowers. Maximus is another favorite, with flowers of the deepest yellow, splendid in shape, but, unfortunately, the

Fig. 31.—Miltonopsis Bleui splendens, in the collection of Mr. F. L. Ames. The flowers, natural size.—See page 197.

bulbs do not always display vigor in constitution. Golden Spur, one of the earliest to bloom; Countess of Annesley, Edward Leeds, Princeps, and the lovely little Tenby Daffodil, N. obvallaris, may also be named. Of the Incomparabilis section the varieties chiefly grown are Cynosure, Gloria Mundi, Lady Watkin, and Sir Watkin, the boldest of the four. Of the Barri group, Maurice Vilmorin, Conspicuus and Mr. Ingram are more largely grown than any others, while of the beautiful Leedsii forms those selected comprise Gem, Duchess of Westminster, a beautiful flower, chaste, sweetly scented and admirable for cutting, Minnie Hume and Madge Matthews. It is necessary to say little respecting the white trumpet Daffodils, as they seem to find little favor, although the varieties display tones of lemon and cream as subtile and pretty as in the choicest exotic. Those that have a good place are Mrs. Thompson, which increases more quickly than the others, Pulcher, Cernuus and Mrs. F. W. Burbridge. The Burbridgei forms are also more for the Daffodil fancier than the grower for market. The flowers are the essence of grace, and most delightful in their delicate shades, but require more than ordinary care to preserve them in true character. Of the Poeticus group Ornatus holds first place, the flowers always, by reason of their earliness and sweetness, commanding a good sale, and many would name this as the most popular Narcissus grown in England. N. Poetarum and N. recurvus form a succession, the list closing with the lovely Gardenia-flowered double N. poeticus, fl. pl. Mr. Walker has tried to force this variety, but without success. Other varieties grown largely consist of Odorus, Odorus Nigilobus, the double flowers like Codlings and Cream, and the old Orange Phœnix.

In the season scores of busy workers can be seen in the large packing-house getting the blooms ready for the market, bunching them together in twelves. The Daffodil seems an ideal market-flower, as it bends at right angles to the stem, thus facilitating bunching or conveyance in boxes to distant places. There are few things that travel so well, keeping fresh for even several days when carefully packed. It is important to gather the flowers before they fully expand. At Ham they are gathered when about half-open, and in the case of Ornatus still earlier, but they open in fresh and perfect condition.

Kew. *V. C.*

Hardy Ferns.

A BED of Ferns will certainly afford the real lover of plants as much satisfaction as he can derive from an equal area devoted to any other use. The hardiest species will grow in almost any partly shaded place, but even these do much better where their needs are carefully attended to. A border along the north wall of the dwelling is usually a suitable location. The bed should be deeply dug, and the soil, even when sandy, mixed with half-decayed leaves for something more than mere porosity. Last year I witnessed an illustration of the benefits of thoroughly overturning the soil. One end of my fernery is filled with the beautiful Ostrich Fern (Struthiopteris Germanica). The group of plants, each with its vase-shaped funnel of leaves, was the especial admiration of visitors, and I never wearied of watching the plume-like fronds unfold in spring, each pinna down-curling at the tip like the veins of the feather from which the Fern takes its name. But two years ago a drain had to be laid right under these plants at no small hardship to the Fern-roots. It would have been no wonder had they all died after such rough usage, yet they made a fair show that summer; and last year, so rich and rampant was the growth that we felt we had gained a new conception of the capabilities of a much-prized plant.

In addition to the kind mentioned above, I would recommend the little Bladder Fern (Cystopteris fragilis), which makes a low growth under the Ostrich Ferns and is useful for bouquets; the Christmas Fern; the finer forms of Aspidium spinulosum; Clayton's Fern, with its hint of variegation and its odd habit of fructification, and, above all, our common Maiden Hair, which the author of that somewhat rare English book, *My Garden*, calls "one of the most lovely of all Ferns." There are many other useful species, though one needs to be careful or the border might be filled with plants whose fronds perish early, like those of the Cinnamon Fern, and leave a vacancy behind.

An edging of cobble-stones makes a suitable line of separation between a Fern-bed and grass. A similar row can be placed at the right distance from the wall to catch the pelting fall from the eaves if water-spouts are lacking, and will also prove a welcome protection to the roots of some delicate plants. Of course, the bed can be beautified by introducing a few other modest plants, whose flowers will help by contrast to heighten the soft effect of the green fronds, and, therefore, between the Ferns and over the gray stones of the border, Violets can grow and any other wildling one especially likes. Trillium grandiflorum is very handsome through May. A recent addition to my collection, Collinsia verna, was charming last spring. The wild Ginger (Asarum Canadense), though brought home in the first place for further study of its curious flowers, would not be spared now on account of the decorative value of its leaves.

As my own fernery serves more as a botanical Snug Harbor, where plants can be kept under surveillance, than as a pleasure-garden, not all its inhabitants would be of general interest. Yet, even with that drawback, it is rarely without some special attraction apart from the constant beauty of the Ferns, from the first twinkling of the snowy stars of Blood-root to the last heads of Eupatorium. I have not, as yet, had success with Cypripediums or any Orchid, but the pleasures of the place depend little on doubtful ventures. Most hardy shade-loving or woodland plants will thrive, some of them in unexampled luxuriance, when removed here from the hard competition of wild life. And no part of one's demesne is likely to yield greater satisfaction than the plot wherein grow roots of one's own collecting.

Geneva, O. *S. F. Goodrich.*

Shading Greenhouses.

IT will not be many days before the annual question of greenhouse-shading must be considered in all houses where summer flowers are grown. In fact, shading to some extent is required at most times when seedlings are coming on and propagation of any kind is attempted. The annual whitewash always seems to me a crude operation and a makeshift, one of the followings of precedents which is so much easier than the striking off into new paths. New paths do not always bring one safely through, but if the old one has known difficulties it is better to venture the new sometimes on chance of gain. It has become a habit to cover the glass of greenhouses as soon as the sun becomes powerful with a film of lime-wash, white-lead in benzine, or some similar coating, to remain through sunny and dull weather until shortening days allow its removal. In large ranges this is, no doubt, the quickest, cheapest and handiest way to protect the contents of a house from scorching, but it is not an ideal one. When the air is clear and the sun is shining with power the translucent glass will admit light enough to keep the plants in fair health, but most plants would be more vigorous if a certain amount of sunlight could reach them. No substitute has yet been found for sunlight which will keep man or plant in good heart. But if the plants suffer somewhat in bright weather, they deteriorate rapidly in long spells of wet, gloomy weather, especially when a little cool and evaporation is slow, for at such times rust quickly gathers and mildew often appears.

Perhaps in large establishments no improvement could be made on the present economical procedure, but it does not follow that the amateur with a small house should content himself with imitating the operations of his commercial neighbors. Aside from the imperfections noted above, applying a wash to the glass of a house is a distinctly unpleasant operation, only equaled by the temper-wearing labor of thoroughly removing the same at a later period. Cotton cloth has seemed to me worth a trial. By tacking the cloth to frames of the right size the greenhouse can be covered quickly and effectively, and it makes a good shading, though not very durable. Cotton cloth is not dear, and even at the additional expense this method seems an improvement on the wash.

Looking around for some suitable material for shading I found at a Japanese goods store some Bamboo-screens, made of narrow strips of Bamboo, woven together with thread or cord. These are very cheap, and should be fairly durable. The screens are to be had in different sizes, those of three by six feet being most useful for me. In using them I run copper wires from the ridge to the lower wall three inches from the glass, and work the screens by the simple expedient of drawing them up with a cord and allowing them to drop out of the way by gravity. A neater arrangement would be to fasten them on spring rollers, which would probably need to be well oiled at first to prevent rusting. The wires would be required with these also to keep the shade at the right distance from the glass. Now, when I wish shade in any part of the house, it is a simple matter to slip in a roll and pull it up to its place, and it is as quickly dropped out of the way. Where hanging plants are grown, it will be necessary to hang them from the girders. If the vines are properly tied out from the glass the screens will work well above them. This is not an

ideal arrangement, but it is an improvement on the former one for my purposes. Its advantages are that it is cleanly and handy. It is quickly applied, and as quickly removed. In dull weather it is out of the way, and the plants have the benefit of all available light. When it is up, and the sun is shining ever so strongly, some of its rays filter through to keep the moisture in motion, which is an important point, and to keep the plants in good heart. The screens being three inches from the glass there is this air-space filled with hotter air rising to the ventilators and helping to keep the lower air cooler. At least it seems to me that on a hot day, with the sun shining, it is distinctly cooler under these cool-looking shades than it was when the wash was used. This may be partly imagination, but as I am not sure that my plants do not possess some of that useful faculty, perhaps they may be affected by the same influence. With the flickering sunlight over them, my plants can scarcely fail to keep in good condition, especially as the shades are dropped at night and the early morning sun is allowed to flood the house.

Elizabeth, N. J. *J. N. Gerard.*

Tomatoes from Immature Seed.

IN the Eighth Annual Report of the Wisconsin Experiment Station Professor Goff reports a series of tests which have been conducted for several years to show to what extent plants may be modified by the selection of seeds. In the fall of 1883 seed was taken from mature fruits of Cook's Favorite Tomato and from other fruits of the same variety which had nearly attained their full size, but had not commenced to change their color. The next year plants were grown from both these selections of seeds, and in the autumn seed was taken as before from ripe fruits of the plants grown from ripe fruits, and from immature fruits of those grown from immature fruits. This was continued for four years, and again in 1889 the experiment was repeated with seed which had been saved from fruit grown in 1886, so that there has been secured one strain of Tomato grown through six generations of seeds known to be fully mature and another strain of the same number of generations from immature seed, and the two strains have been grown side by side.

The effect of this selection upon the plants is made very clear by illustrations in the bulletin, which show that the plants from immature seed have been perceptibly reduced in size, while their prolificacy has been increased. Ten plants grown from ripe seed last year, after the fruit had been picked, weighed more than twice as much as the same number of plants from immature seed. Ten plants from ripe seed up to the middle of September had matured 1,298 fruits, while the plants from unripe seed had matured 2,519 fruits which weighed nearly twice as much. Besides these differences the use of immature seeds has plainly tended to promote early maturity, and in a comparison carried on for five years the strain from unripe seed gave fruit on an average twelve and a half days earlier than the other strain. The size of the fruit from immature seed has been reduced about one-twelfth. This fruit is less firm than that from ripe seed; the rind is thinner; it has a somewhat greater tendency to ripen unevenly, and it is often slightly green at the centre when appearing ripe externally. In keeping quality it is inferior to that from ripe seed, as a rule. In form it is more oblate, contains more cells, and has a greater tendency to grow double. The posture of the plant has been rendered more decumbent, while the color of the foliage has been uniformly lighter, and its tendency to blight has been noticeably greater.

In summing up, Professor Goff thinks that the following practical lessons may be deduced from these and some other experiments with feeble plants:

"1. The results suggest that in our climate the Tomato, at least its more rampant-growing varieties, may be rendered more productive and earlier in maturing by a treatment that reduces the native vigor of the plant. Growing the plants on rather poor and dry soil, pinching the growing points, or root-pruning should accomplish this end.

"2. The health of plants is in a degree dependent upon the quality of the seed used. In these days of severe competition in the seed trade, dealers are doubtless often tempted to use immature or otherwise unsuitable stock for seed. The popular demand for cheap seeds tends to deteriorate quality in this commodity, and consequently in our crops, and to render the latter more subject to disease.

"It must not be understood that the use of immature Tomato-seed is sanctioned or recommended in this article. The experiment is not as yet complete, and it is too early to announce its full teachings."

Early Spring Flowers.

AT the last meeting of the Pennsylvania Horticultural Society Mr. John Bell read a paper on the "Garden in Spring," from which we extract the following paragraphs relating to the earliest flowers:

If the ground is not covered with snow in February one of the most striking features one would see in taking a walk through our grounds would be beautiful carpet-like masses of the yellow Buttercup-like flowers of the Winter Aconite (Eranthis hyemalis) and groups of the different varieties of the Snowdrop. These grow in the shade of a large-leaved Magnolia-tree (M. macrophylla) on a slope facing east, where the grass will not grow in summer. A few steps farther, on the margin of a group of the Great Laurel (Rhododendron Maximum), we come on a group of Christmas Roses (Helleborus) in varieties from pure white to dark purple, some with green flowers and some with greenish white flowers. Beyond these are Crocuses in many colors, with their flowers opened while the sun shines on them, and in the near distance can be seen the male blossoms of the Filbert or Hazel-nut, and the catkins of the Goat Willow, which are very beautiful at this early season.

The various evergreens, both trees and shrubs, are very cheering at this time, some of the oldest trees having their trunks covered with varieties of the evergreen English Ivy. Among the broad-leaved kinds near the house are groups of hybrid Rhododendrons and Azaleas, Euonymus Japonica and its varieties, Daphne Mezereum, D. Laureola, D. Pontica, Kalmia latifolia, Leucothœ Catesbæi, Heather (Erica carnea), Ilex glabra and I. verticillata, with its red berries hanging on all winter, and all helping to lighten up the dreary season in February and March.

At the close of March and in the early days of April appear on the margins of these groups of shrubs the various species of Primula—P. Japonica, P. Sieboldi, P. vulgaris (English Primroses), P. veris (Cowslip), P. elatior and other hybrids, Spring Snowflake (Leucojum vernum) and Summer Snowflake (L. æstivum), Wood Anemone and Anemone Pennsylvanica, Moss Pink (Phlox subulata) and its varieties, with the Spreading Phlox (P. divaricata), and the various kinds of Scillas.

Then we have in sheltered places a beautiful variety of evergreen herbaceous plants starting into new growth, after lasting all the winter green and fresh. Among these are Arum Italicum, the Madonna Lily (Lilium candidum), Pachysandra procumbens, the Christmas Fern (Aspidium acrostichoides), four species of Yucca (Y. filamentosa, Y. Gloriosa, Y. glaucescens, Y. angustifolia), Butcher's-broom (Ruscus aculeatus), Hypericum calycinum and Evergreen Candytuft (Iberis corræfolia). A very large tree of the white Yulan Magnolia (M. conspicua) stands surrounded with a thick growth of the Children's Bluebell or Grape Hyacinth of English meadows (Muscari racemosum), intermixed with the Tenby Daffodil (N. obvallaris), one of the first of the family to bloom, while on the shady side of the tree a group of the wild English Cowslip (P. veris) is in bloom at the same time. Then follow in succession the many species and varieties of the Narcissus family, the good old Daffadowndilly, Butter and Eggs, Pheasant's-eye and the rest, coming into flower one after another until May, and with the last of these are associated the white and purple flowered Wood Lilies (Trillium grandiflorum and T. erectum), the Wild Tulip of the English woods (T. sylvestris), the blue alpine Anemone (A. alpina), the double and single flowered Pile-wort (Ficaria ranunculoides), our beautiful native Dicentras, the Blood-root and the various sorts of Dog-toothed Violets. Of course, this does not include all the interesting hardy flowers among the earliest ones, for there are Fritillarias and Violets, the Siberian Columbine and Twin-leaf, and many more, but surely here is a list which ought to be able to brighten any rock-garden or border from the time that snow falls until the trees are in leaf and before the gay season of Peonies and Roses.

The Forest.

Timber-culture in Eastern Nebraska.

A VISIT to a region where land has been secured under the timber-culture acts will convince any one that the consciences of those "proving up" claims were often quite elastic, and the forlorn appearance of many of the trees and bits of woods proves that the legislation failed to effect the beneficent end it proposed. But some of the claims give evidence of hopeful possibilities in timber-culture. Last winter I was at the farm of Mr. James Stephen, a business man of Central

City, Nebraska, 130 miles west of Omaha, or very near the ninety-eighth meridian and not too near the arid region for trees to do fairly well. The farm is on the south side of the Platte, which here comes near the bluffs, and lies on the margin of the plain, which rises considerably higher than the river-valley. The plain is carved along its edge into irregular masses of knolls, which form the bluffs. These are separated by numerous little valleys called "draws," which come down from the plain to the river-valley below, and through them the water flows from the edge of the plain above when it falls in sufficient quantity. There is scarcely any trace of a stream-bed, for there are no pebbles or stones to mark it, and the little hollows are soon overspread with grass and other plants. The draws are an evidence of a climate dry at some seasons, but with rain enough at times to run down the slopes and wash out the earth.

It was on the slope of one of the draws that the principal plantation stood, near where it started from the plain, so that it had essentially the same prairie-like soil. This is a dark clay or marly loam, mixed with some sand. The quantity of sand in the soil of the bluffs increases, and the soil becomes less productive as the river-valley is approached. The aspect of this tract of trees was eastward, with a slight bearing to the north. Smaller areas had been planted on the tops of the ridges nearly on a level with the plains and more exposed to the wind, for it was evident that the slope protected the trees to a certain extent, since they were smaller on the west side, where most exposed to the prevailing winds. When the claim was approved by the Government there were 6,800 trees on five acres of ground. This amount is far from excessive when compared with what may be borne on an acre, but they stood quite close together and would soon need thinning, though a natural process of thinning would soon begin. The species chiefly planted were Black Walnut, Elm, Box Elder, Ash, Catalpa, Red or Silver Maple, Sycamore and Honey Locust—the first three kinds predominating. The Cottonwood was discarded as undesirable, though a few had obtained a foothold. The owner took the most pride in the larger tract of three and a half acres, where the trees had been planted six years and most of them were from two to four inches in diameter and from eight to fifteen feet high. The majority of the vigorous trees on the larger area would average three inches in diameter and ten to twelve feet high. As yet all species had grown to about the same height, although there was a difference in the character of the tops, which varied somewhat in accordance with the natural habits of the trees. The bark showed a healthy growth, being close, even and free from fungi, insects or anything injurious. The few Cottonwoods accidentally present served for comparison, having made a larger growth in the same time, the boles being from six to eight inches in diameter and the trees from twenty to twenty-five feet high.

The Black Walnuts were of special interest on account of their greater economic importance than most of the other kinds. Most of them were fine straight specimens, and in sufficient quantities in many parts of the grove to occupy the ground exclusively when they needed the space for development. How high they may grow or what dimension of trunk they will attain can only be determined by the future, but at six years of age they were very promising. As the Black Walnut is indigenous to eastern Nebraska, this is also in its favor. It is found north of Central City in the vicinity of the Elkhorn River and north-west near the boundary of South Dakota, on the bluffs of the Niobrara and its tributaries. Professor Bessey has found it as far west as the one-hundredth meridian. In central Kansas, Indian Territory and in Texas it reaches ninety-eight and a half degrees west. Trees on the Niobrara were two to three feet in diameter, and lumber had been manufactured from them. The altitude of Central City is about 1,800 feet; that of the region about the Niobrara (Long Pine Creek) 2,250 feet. Fruit was observed clinging to the branches of the Box Elder (a common tree also along the streams where any timber was seen), Sycamore, Ash, Honey Locust, Catalpa, and I was told that some of the Black Walnuts had borne.

These groves had been carefully attended, and the weeds kept down till the trees were large enough to care for themselves or did not allow the ready passage of a horse and cultivator between the rows. The main implement used besides the hoe was a triangular harrow, like the old-time corn-cultivator, with drag-teeth extending two or three inches below the beams, not far enough to interfere with the roots of the young trees. The tops now form a canopy sufficiently dense to shade the ground and prevent the growth of grass and injurious weeds, and the leaves are already lodging about their roots and beginning to form a mold, so that forest-conditions of soil have already begun, and such wood-plants will only grow as flourish in the shade. The trees had also been judiciously pruned. Owing to climatic conditions there would probably be greater need of this in Nebraska than in the forest-region farther east, for in the western edge of the forest-belt, and where it stretches out along the rivers, there is observed a special tendency of the trees to branch low down. One of the first characteristics noticed by a person familiar with the appearance of forests along the Mississippi and eastward, and passing through this region for the first time, is the low habit and widely spreading tops of the trees seen along the streams. Many of them are nearly as broad as high, with very short trunks and bushy crowns. The general facies is that of trees growing in an orchard. Several trunks may at times be seen starting from the surface of the ground, or but little above it, as if the trees were huge overgrown shrubs, or had developed from stool-shoots springing up from the base of a tree of earlier growth which had passed away. This was always very pleasing to the eye, for nearly every tree with such a habit was ornamental, but it would not be as useful for timber. From this tendency of the climate trees that are planted wou'd doubtless share in this habit, and extra pruning, or very close planting, would be necessary to counteract it. An orchard of Plum and Cherry trees on the farm showed the same habit in an impressive way. From trunks barely more than a foot high limbs freely branched, giving all the trees the appearance of dwarfs, much like an orchard of dwarf Pear-trees. They had compact, well-rounded tops and were very shapely, and even handsome.

There was another view of timber-culture suggested by these groves, the bluffs and draws along the Platte. Much of the land is poor, especially near their margin, with soil too thin for profitable cultivation and becoming dry in summer. Then the land is rough with countless little valleys and knobs, often with steep sides like those bordering a ravine. It would seem advantageous for the greater part of such a region to be given up to forest-culture. If furnished with trees they would in time supply a large amount of useful timber to a contiguous region greatly in need of it. The valley is broad, from three to ten and twenty miles, and essentially flat, but with a downward slope sufficient to give the river a strong current. The river itself is usually a mile or more in width, but very shallow. The water in many parts of it almost, or quite, disappears in the summer season, making its way as a subterranean stream in the loose earth, which is reached by digging a few feet beneath the surface of the ground. Though it has doubtless shifted its bed more or less from side to side in the valley in the past and cut away the bluffs and widened its flats, it is evident that the valley owes much of its width to the slow disintegration of the plain bordered by the bluffs, the water from the edge of the plain passing down through the draws and cutting them slowly back, for the elevations bordering the draws, or scattered through them in their wider parts, are of all shapes and sizes, from little knolls but a few feet high to small hills with tops on a level with the plain, and everywhere shows the erosive action of water. A forest covering land circumstanced like these bluffs would prevent additional wear and transportation of the richer soil from the edge of the plain into the valley below.

The trees growing here corroborate what a study of the best rain-charts indicates, which is, that fully half of Nebraska, aside from the region of sand-hills where they come into its eastern part, is so situated with regard to precipitation as to make the growth of timber practicable, while belts along the streams extend the region still farther west. Then it is to be borne in mind that the dry season, or time of least precipitation, is the winter, the period of rest for trees, so that they receive their supply of moisture in the growing season when most in need of it.

Englewood, Chicago, Ill. *E. J. Hill.*

Correspondence.

Transplanting the Trailing Arbutus.

To the Editor of Garden and Forest:

Sir,—Admirers of the Trailing Arbutus, or May-flower (Epigæa repens), may be glad to know that this charming plant can be successfully transplanted to one's home grounds with reasonable certainty of success. At least such is my experience after having transplanted several, which at this writing (April 20th) are in full bloom for the second time since they were placed beneath the Laurels, Huckleberry-bushes and scrub Pines skirting my lawn. The first plants set out were taken up February 2d, 1891, having been brought from an open hill-side about a quarter of a mile distant. On the following

day three unusually large, long-stemmed plants were received by express from a locality over twenty miles distant, the earth being mostly loosened from the roots by the shaking the box had received during transit. The last-mentioned plants had a precarious existence for a time, and considerable portions of each died; but the surviving portions became in due time floriferous and made new growth. The others did not for a moment seem affected by the change, but grew vigorously and bloomed most profusely. The last of October a friend brought me a plant which he had taken up carefully and placed in a basket; this grew uninterruptedly after planting, and is now in bloom. In December one of the plants set out in February had to be again transplanted, on account of the removal of the tree which shaded it. It apparently received no injury from this second transplanting, and is now as full of blossoms as the other plants, although it was one of those whose survival after the first transplanting I for some time despaired of.

The dates of transplanting were various, and in no instance according to rules "laid down in the books." The secret of my success consists, I think, in three things I was careful to observe, as follows: (1) Remove the plant without disturbing the roots, though experiment No. 2 shows that plants which have their roots nearly denuded may be saved by careful replanting. (2) Select a place for replanting which has conditions of soil, exposure, etc., as nearly as possible like those where the plant originally grew. (3) Plant carefully.

The best way is to cut all round a plant with a spade, not less than two inches beyond the extremities of the longest stems; the entire piece should then be carefully lifted by running the spade horizontally underneath, at least three (better four) inches below the surface of the ground; the whole should then be placed in a basket on damp moss, and replanted at once. In replanting remove a piece of surface-soil a little larger and deeper than the piece to be planted, the difference in depth to be made up by the addition of sand, or sand and fine gravel; then carefully insert the piece, firming it down well, especially about the edges, and fill in whatever space there may be around it with sandy or gravelly soil firmly impacted.

While the plants set out soon after being taken up grew most vigorously, it is among these that the most unpromising specimens are now found. The present bad condition of these I attribute to the disturbance of their roots by pulling out grass which had begun to crowd and choke them. The plants which had been nearly dried by shaking off the soil from their roots during transportation were planted on a dry hill-side, under low-branched scrub Pines, and consequently have not had the grass to contend with, which, doubtless, accounts for their continued improvement since convalescing.

Brookland, D. C. *Robert Ridgway.*

Easter Flowers in Philadelphia.

To the Editor of Garden and Forest:

Sir,—The season just past showed an increased demand for flowering plants in the celebration of this festival, and though a greatly increased supply was provided the local market was not overstocked. The Lilies continue to hold first place among Easter flowers, and generally they were of very good quality, the stocks being about equally divided between L. Harrisii and L. longiflorum, though there is some reaction of opinion in favor of the latter for Easter use, while L. Harrisii will probably retain its precedence as an early-forcing variety. Some of the commercial growers produced fine specimen Lilies by planting four or five bulbs in an eight or ten inch pot, and many of those grown in this manner produced from thirty to forty flowers, and for certain purposes such groups are admirable. Plants of this character are too costly, however, for general retail purposes, and a majority of flower buyers prefer a single-stemmed Lily when well-grown and crowned with five to ten large flowers. Lilium candidum is but little grown now for Easter use, though a charming plant for cut-flower arrangements. Some few other species have been tried to a greater or less extent in the past few years, among them L. auratum and some varieties of L. lancifolium, but though they are beautiful in themselves, yet they do not attract much attention from the buyers of Easter flowers, and consequently these ventures have not proved profitable.

Cytisus and Hydrangeas were also plentiful and met with a ready sale, small and medium-sized Hydrangeas apparently being most in demand, and since the season was late there was no difficulty in getting these plants in flower at the proper time without resorting to hard forcing. Azaleas continue to hold their place among the indispensables for Easter decoration, and they were not overplentiful this season, at least those of good quality. Comparatively little change in varieties was seen among the Azaleas, most of them being such standard sorts as Madame Vander Cruyssen, Eugene Mazel, the white Bernard Andreas, Borsig and a few others, the most notable among the newer varieties being Vervæniana and a bright crimson named Flambeau. The latter has a very striking color, and will doubtless soon become better known.

Bulbous stuff, in general, was not of remarkably good quality, though some fine Tulips and Von Sion Daffodils could be seen, the Daffodils being very popular for corsage-bouquets at this time. In cut flowers the quality was good, Roses in particular having been favored by the cool days immediately preceding Easter; this made them more firm in texture, and consequently more lasting. Among Orchids the flowers of Cattleyas, Cypripedium Lawrenceanum, Dendrobium densiflorum and a few other Dendrobiums were chiefly used. Some cut blooms of Anemone Japonica could be seen, and, though pretty, they attracted but little attention.

As usual, a great many Palms were used, few decorations seeming complete without more or less of these most graceful of foliage plants. Araucarias, too, were used to some extent, and though very durable for house-decoration they are somewhat expensive, from the fact that so far they have nearly all been imported from Europe. This is likely to be remedied in a few years by the propagation of sufficient stock on this side of the water, for European importations are frequently disappointing from the number of imperfect plants they contain.

Holmesburg, Pa. *W. H. Taplin.*

Spraying Machines and Insecticides.

To the Editor of Garden and Forest:

Sir,—Will you name some portable spraying apparatus suitable for the needs of a small place—a garden with fruit-trees—and their approximate cost?

2. Is there any way to circumvent the aphis on the Snowball, which attacks the under side of the leaf so that it curls up?

Whitewater, Wis. *Albert Salisbury.*

[So many manufacturers make good pumps for spraying with insecticides that it is hard to say which is the best. For work like that mentioned by Mr. Salisbury a Knapsack sprayer would be satisfactory. One called the Eureka is made by N. Bokel & Co., of Philadelphia, which has a good apparatus for spraying the under side of leaves; this costs $21.00. The Galloway sprayer, which is about one-third cheaper, is made by Albinson & Fruscheim, of Washington. The Excelsior sprayer, which costs about as much, is made by Stahl, of Quincy, Illinois. The Field Force Pump Company, of Lockport, New York, have a sprayer of a different pattern and at nearly the same price, and a still cheaper one is named the Ideal, and is made at Egg Harbor, New Jersey. If Mr. Salisbury would apply to the experiment station in his state, no doubt Professor Goff would tell him which machine he finds most effective there, and our readers generally will receive intelligent answers to questions relating to insecticides and fungicides by applying to the horticulturists at the experiment stations of their various states.—Ed.]

The India-rubber Tree.

To the Editor of Garden and Forest:

Sir,—The bushy habit of specimens of Ficus elastica, mentioned in a late issue of Garden and Forest, may be secured by forcing, with the best conditions of soil, temperature, etc., but many amateur growers do not have these conditions. To check the upward growth of a large plant which was making rapid headway in our garden two years ago, a band was tightly wrapped below the topmost leaf. The growth in this direction was checked, and several branches soon started out along the main stem. When these were well grown the band was removed, so as to allow a symmetrical development. This method is better than that of cutting off the main stem.

Brooklyn, N. Y. *M.*

Insects on Cherry-trees.

To the Editor of Garden and Forest:

Sir,—I have several Cherry-trees which seem to be fairly vigorous, but each year they are covered with black insects

which destroy the fruit and render the foliage unsightly. Can you suggest an efficient remedy?

Brooklyn, N. Y. *T. G.*

[These insects are the ordinary and often-destructive Cherry-lice (Myzus Cerasi). They appear early in the season without attracting much attention, but they multiply very rapidly if the weather is warm and dry. The remedy for them is to spray the tree with the kerosene emulsion diluted fifteen times, or with whale-oil soap-suds, in the proportion of one pound of soap to eight gallons of water. Two ounces of crude carbolic acid added to the mixture will make it more effective.—Ed.]

Notes.

From a Carnation-house one hundred and twenty-five feet long and twenty feet wide near Philadelphia, chiefly planted with the variety Lizzie McGowan, there were cut during the season up to the 1st of April more than 70,000 flowers.

The reports from different cities in the country, which were published in the *American Florist* last week, show that the trade in flowers for Easter was larger than it has been for years. The stock of Lilies was unusually large, but not a flower seems to have been wasted.

Among the shrubs of comparatively recent introduction is a Japanese member of the Witch Hazel family called Corylopsis pauciflora. It has short drooping racemes of yellow flowers, which appear before the leaves, and it is really an admirable garden-plant, which ought to be better known.

A peculiarly fine effect in mahogany (says a writer in *The Sun*) is obtained by sawing crotches. A piece is sawed just above and just below a point where two limbs shoot out on opposite sides. When such a piece is properly cut up into veneer, the crotches show in beautiful plume-like markings through the middle of each sheet.

A recent writer, describing the winter aspect of the geyser-basins in the Yellowstone Park, says that one of the most interesting features of the hot pools is the continued growth of vegetation throughout the year. In certain spots underground heat preserves an even temperature in the earth, no matter how cold the atmosphere may be; and, in consequence, rich patches of green may be found entirely surrounded by masses of ice and snow.

Mr. George Klehm has for some years been growing Tulip-bulbs at his place on the shores of Lake Michigan, near Chicago, and every year he is successfully and profitably enlarging his business. In a paper read before the Florists' Club of that city it was argued that Mr. Klehm's experience had demonstrated that the business of raising Tulips, and perhaps some other kinds of Dutch bulbs, could be made a profitable industry even in the climate of Chicago.

In reply to several correspondents who wish to write to their representatives in Congress concerning the attack on Yellowstone Park we would say that the vicious scheme to grant exclusive privileges to the Montana Mineral Railway Company is House bill Number 4545. It has already been reported favorably in the house. Senator Warren's bill, which reduces by one-half the forest-reservation adjoining the park, has also been reported back from the committee to the Senate. Its number is 2373.

A correspondent of the *Gardeners' Chronicle* complains that throughout the Forest of Dean and elsewhere where there are large woods, swarms of men, whom he calls "Fern-tramps," are constantly gathering Ferns, which they carry away in large sacks for sale. In many places rare varieties of Ferns are almost exterminated. To this the editor adds that he has seen bushels of Ferns exposed for sale on costermongers' barrows in the streets at eightpence per dozen, at which rate there soon will be very few left in the country.

Winter Sweet is the appropriate English name given to Toxicophlæa spectabilis, one of the interesting woody plants which have been more or less crowded aside to make room for the more popular Orchids. A portrait of this plant is given in the last number of the *Gardeners' Magazine*, which has come to hand, and well shows the flowers crowded into axillary corymbs and wreathing the long branches with white blossoms. The fragrance of these flowers is very sweet and penetrating, and the plant does not need the stove treatment which is usually given to it, for it thrives perfectly in a temperate house, although it does not flower so early. Plants of this kind will not suffer neglect, and they too often are little less than eye-sores, but if they are carefully cultivated, specimens in full health are beautiful objects, and will remain so, from year to year, for a long time.

The public reservations of all kinds in the city of Washington, including the parks proper and the small spaces which are called squares, circles and triangles, but excluding the Botanical Garden and the grounds of the Department of Agriculture and the Soldiers' Home, amount to about 400 acres. Two hundred and sixty-eight acres are estimated to be in a condition which needs no further improvement, eighty-three acres to be partly improved, and forty-six as yet wholly neglected. The Botanical Garden covers ten acres and the Agricultural Grounds cover forty acres.

The Parapee Palm (Guilielma speciosa) is cultivated by the Indian aborigines of the Guianas for its fruit, which they largely use as food. They plant it about their settlements, and where it is found apparently wild in the forest, examinations will show that such situations were formerly occupied by the Indians. In some seasons the fruit is produced without seed—that is, it consists entirely of pulp, like the plantain and banana, while in other seasons it contains seeds; this variation occurs in the fruit of the same trees from season to season, and plants raised from these seeds show the same characteristics of variation in the fruit. When boiled or roasted the fruit has something of the texture and taste of a very dry mealy potato. It is palatable, very nutritious, and residents in the interior have a particular liking for it. When ripe the exterior covering of the fruit is yellow, thin, and only slightly fibrous, while it is mealy and yellow within. The fruits, which are individually about the size of a pigeon's-egg, are borne in bunches of from forty to sixty together. There are two or three bearing seasons in a year.

We have spoken on more than one occasion of a disease which attacks the Sugar Beet, and which has been identified with the scab fungus of the Potato discovered by Dr. Thaxter; and now, according to a bulletin just issued by the Indiana Experiment Station, a new disease of this Beet has been discovered in the form of a bacterial parasite which does not cause the death of the plant nor show any spots on the surface nor any discoloration of the tissues. A puffed condition of the mature leaves, and their smaller and paler development, are its best external signs, and it is shown in the root when cut open by the greater prominence of the fibre, a yellowish tint and a less firm texture. The microscope shows the presence of numbers of bacteria in all the tissues, although the gross characters already given do not enable one always to separate healthy and diseased Beets. It is not known yet how the disease is transmitted from plant to plant, and no method of averting it is suggested. Its insidious character is plain from the fact that it has so far escaped detection or even suspicion, although examination showed that it was common throughout Indiana, at least. The disease is certainly a matter of serious importance to all who cultivate or use the beet crop because it decreases the sugar contents of the beets materially. In some cases studied at the station the loss amounted to as much as fifty per cent.

The horticulturists and fruit-growers of the United States have demonstrated their alertness to grasp new ideas in the speedy adoption of the practice of spraying to protect their orchards and vineyards against insects and fungi. The practice on the other side of the Atlantic in this direction is much less advanced than it is here. Almost all of our experiment stations have issued instructive little manuals on the subject, which any one can have for the asking, and these manuals answer almost all the questions which any intelligent fruit-grower will ask. Bulletin 86, which has been just issued by the Experiment Station of New Jersey, contains in twenty pages almost all the information needed by those persons who intend to use insecticides and fungicides during the coming season. It does not pretend to give any new information, but in a concise way it gives all the necessary directions as to the selection of machinery, the preparation of insecticides and fungicides, the method and time of application, etc. There is no need of repeating any of this advice here, since it has all been given more than once in these columns, but it is worth while to remember that a spraying-machine of some kind has become a necessary part of the machinery on every farm, and no gardener, fruit-grower or farmer should rest satisfied until he has prepared himself with the proper apparatus and has learned how to use it intelligently.